UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,675	07/14/2003	Maryellen L. Giger	239738US20	4119

22850   7590   07/17/2007
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
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EXAMINER
AKHAVANNIK, HADI

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
07/17/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2007*.

2a)☐ This action is **FINAL**.　　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

Response to Arguments

1.   Applicant has amended the independent claims to include "the prognosis of

recovery includes an indication of the likelihood of survival". The examiner agrees that

the previous rejection does not teach this limitation. However, prior art Ohno-Machado

et al. (paper titled "Modular Neural Networks for Medical Prognosis: Quantifying the

Benefits of Combining Neural Networks for Survival Prediction", referred to as

"Machado" herein) discloses using neural networks to indicate the likelihood of survival

of a patient.

2.   Second, the applicant has submitted a statement of common ownership, which

disqualifies the "Armato" patent. The examiner believes that this only renders the

rejection of claim 14 moot and not claims 13 and 16, as applicant argues on page 11 of

the remarks. This is because the Armato patent was only used on the rejection of claim

14 and 18-19.

3.   For the rejection of claims 14 and 18-19, the examiner is using Ravdin et al

(paper titled "A practical application of neural network analysis for predicting

outcome of individual breast cancer patients") as it discloses using additional

truth indicators such a lymph involvement in a prognosis result using a neural

network.

4.   Please see final rejection below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-12, 15, and 17-19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Giger et al. (5657362, referred to as "Giger" herein) in view of Ohno-

Machado et al. (paper titled "Modular Neural Networks for Medical Prognosis:

Quantifying the Benefits of Combining Neural Networks for Survival Prediction", referred

to as "Machado" herein)

Regarding claim 1, Giger discloses obtaining segmented image data of a portion

of the medical image data corresponding to an abnormality (see abstract and column 4

lines 7-35 disclsoes receiving a segmented image of the breast);

extracting at least one abnormality feature from the segmented image data

corresponding to the abnormality (column 6 lines 40-65 discloses extracting a lesion

portion);

Giger discloses judging the quality of the abnormality feature in column 6 line 66

to column 7 line 15 but Giger does not explicitly disclose determining the prognosis

which includes an indication of the likelihood of survival.

Machado discloses determining the prognosis of recovery, which includes the

likelihood of survival (see abstract, figures 1-2, 8 and section titled "Materials and

Methods", as it discloses using a classifier, where abnormality information is inputted, to determine the likelihood of survival and a prognosis of a patient).

It would have been obvious at the time of the invention to one of ordinary skill of the art to combine in Giger a prognosis method as taught by Machado. The reason for the combination is because it makes for a more robust system that is able to present an operator with a prognosis so to make for more efficient and accurate treatment planning. Also both inventions are from the same field of endeavor of medical analysis.

Regarding claim 2, the combination of Giger and Machado disclose obtaining segmented image data of a portion of the medical image data corresponding to a parenchymal region (see Giger column 7 lines 52-60 and column 8 lines 8-22 discloses examining a parenchymal region);

and extracting at least one parenchymal feature from the segmented image data corresponding to the parenchymal region (Giger, column 8 lines 8-15 discloses finding abnormalities in the parenchymal region),

wherein the determining step comprises determining the prognosis on recovery based additionally on the extracted at least one parenchymal feature (as noted in the rejection of claim 1, Giger discloses finding parenchymal features and Machado disclose a classifier that takes in abnormality information and produces a prognosis and likelihood of survival).

Regarding claim 17, please see the rejection of claim 2 above as it discloses all aspects of claim 17.

Regarding claim 3, Giger discloses determining the contrast corresponding the

parenchymall region (see column 6 lines 53-65 disclosing finding intensity based

features)

Regarding claim 4, Giger discloses in column 7 lines 34-60 that an image is

received that includes but abnormalities and regions free from abnormalities. The data

is analyzed to determine potential abnormalities.

Regarding claim 5, Giger discloses in colunm 6 line 66 to column 7 lines 33

discloses locating a region and performing region growing.

Regarding claim 6, Giger discloses mammographic image data (see abstract).

Regarding claim 7, Giger discloses radial gradient index (see column 6 lines 54-

60)

Regarding claim 8, see Giger, column 7 lines 34-51 discloses dense portion

analysis.

Regarding claim 9, see Giger, column 5 lines 15-33, disclose gray level of the

ROI.

Regarding claim 10, Giger discloses determining speculation measure in column

8 lines 23-36.

Regarding claim 11, the rejection of claim 10 discloses determining the

speculation based on histogram enhancement and edge enhancement.

Regarding claims 12 and 15, Giger discloses using an ANN in column 8 lines 1-

5. Giger discloses using ANN on both the parenchymal and lesion region.

Regarding claims 18-19, please see column 1, lines 7-19 of Giger as it discloses

the method is computerized.

6.   Claims 13, 16 and 18-19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Giger in view of Machado as applied to claim 1 above and in further

view of Huo et al. (6282305, refered to "Huo" herein).

Regarding claim 13, the rejection of claim 1 discloses all aspects of claim 13

except it does not explicitly disclose using a linear discriminant.

Huo discloses applying the extracted at least one abnormality feature to a linear

discriminant that classifies the abnormality at an output of the linear discriminant (see

column 17 line 46 to column 18 line 55 as it discloses using linear discriminant to

classify an abnormality).

It would have been obvious at the time of the invention to one of ordinary skill in

the art to include Machado and Giger a linear discriminant analysis (LDA) means as

taught by Huo. The reason for the combination is because LDA is a well known and

established statistical technique that can classify into two groups of cases (see

motivation by Huo in column 17 lines 63-67).

Regarding claim 16, please see the rejection of claim 13 above as it discloses all

aspects of claim 16.

Regarding claims 18-19, please see column 1, lines 7-19 of Giger as it discloses

the method is computerized.

7.   Claims 14 and 18-19 is rejected under 35 U.S.C. 103(a) as being unpatentable

over Giger in view of Machado as applied to claim 1 above and in further view of Ravdin

et al. (paper titled "A practical application of neural network analysis for predicting

outcome of individual breast cancer patients", referred to as "Ravdin" herein).

The rejection of claim 1 discloses all aspects of claim 14 except for using lymph

node involvement as a truth indicator. Although, Machado does disclose using truth

incidators in Table II.

Ravdin discloses including lymph node involvement on page 286 column 1.

It would have been obvious to one of ordinary skill in the art to include in Giger in

view of Machado an additional truth table inclusion means as taught by Ravdin. The

reason for the combination is because it makes for a more accurate system that gives a

more informed assessment of the likelihood of survival of the subject.

Regarding claims 18-19, please see column 1, lines 7-19 of Giger as it discloses

the method is computerized.

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

9.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Hadi Akhavannik whose telephone number is 571-272-

8622. The examiner can normally be reached on 10:30-7:00.

      If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Bhavesh M. Mehta can be reached on (571)272-7453. The fax phone

number for the organization where this application or proceeding is assigned is 571-
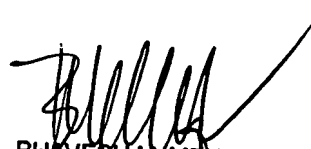
273-8300.

      Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2624

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7/6/07

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